

WHAT IS CLAIMED IS:

1. A method for tuning a transconductor,  
comprising:  
receiving a digital value; /  
5 determining a bit value for a selected bit of the  
digital value;  
selecting a tuning range for a transconductor based  
on the bit value; and  
tuning the transconductor within the selected range  
10 based on any remaining bits in the digital value.
2. The method of Claim 1, wherein selecting the  
tuning range comprises selecting a resistor from a  
plurality of resistors.
- 15 3. The method of Claim 1, wherein tuning the  
transconductor comprises:  
converting the remaining bits into an analog signal;  
and  
20 tuning the transconductor based on the analog  
signal.
4. The method of Claim 1, further comprising:  
selecting an additional bit of the digital value;  
25 and  
selecting a subrange within the range based on the  
value of the additional bit.

5. The method of Claim 1, wherein:  
the transconductor comprises a first transconductor  
and a second transconductor;  
selecting the tuning range comprises selecting a  
gain for the first transconductor and a gain range for  
the second transconductor; and  
tuning the transconductor comprises:  
producing an output current of the  
transconductor using an output current of the first  
transconductor and an output current of the second  
transconductor; and  
tuning a gain of the second transconductor  
within the gain range based on the remaining bits of  
the digital value.

6. The method of Claim 1, wherein the  
transconductor is used to form a selected one of a  
filter, amplifier, mixer, integrator, or charge pump.

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7. A transconductor circuit, comprising: /  
a digital-to-analog module operable to receive a  
digital value and to determine a bit value for a selected  
bit of the digital value;

5 a digital control module operable to select a tuning  
range for a transconductor based on the bit value; and

an analog control module operable to tune the  
transconductor within the selected range based on any  
remaining bits in the digital value.

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8. The circuit of Claim 7, wherein the digital  
control module is further operable to select the tuning  
range by selecting a resistor from a plurality of  
resistors.

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9. The circuit of Claim 7, wherein:

the digital-to-analog module is further operable to  
convert the remaining bits into an analog signal; and

20 the analog control module is further operable to  
tune the transconductor based on the analog signal.

10. The circuit of Claim 7, wherein:

the digital-to-analog module is further operable to  
select an additional bit of the digital value; and

25 the digital control module is further operable to  
select a subrange within the range based on the value of  
the additional bit.

11. The circuit of Claim 7, wherein:

the transconductor comprises a first transconductor  
and a second transconductor, each transconductor  
producing a respective output current, wherein an output  
5 current of the transconductor is produced using the  
output currents of the first and second transconductors;

the digital control module is further operable to  
select the tuning range by selecting a gain for the first  
transconductor and a gain range for the second  
10 transconductor;

the analog control module is further operable to  
tune a gain of the second transconductor within the gain  
range based on the remaining bits of the digital value.

12. The circuit of Claim 7, wherein the  
15 transconductor is used to form a selected one of a  
filter, amplifier, mixer, integrator, or charge pump.

13. A circuit, comprising: /

a first transconductor;

a second transconductor coupled to the first  
transconductor such that the first and second  
transconductors are operable to produce a combined output  
current from respective output currents of the first and  
second transconductors;

a digital-to-analog module operable to:

receive a digital value;

extract one or more bits from the digital  
value; and

convert the remaining bits of the digital value  
into an analog signal;

a digital control module operable to:

receive the one or more bits as a digital  
signal; and

select a gain for the first transconductor and  
a gain range for the second transconductor based on  
the digital signal; and

an analog control module operable to:

receive the analog signal; and

tune a gain of the second transconductor within  
the gain range based on the analog signal.

14. The circuit of Claim 13, wherein the digital  
control module selects a gain for the first  
transconductor and a gain range for the second  
transconductor at least in part based on a selected bit  
of the digital signal.

15. The circuit of Claim 13, wherein the digital control module selects the gain of the first transconductor and the gain range of the second transconductor by selecting one of a plurality of resistors.

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16. The circuit of Claim 13, wherein the circuit is used to form a selected one of a filter, amplifier, mixer, integrator, or charge pump.

17. Software embodied in a computer readable medium operable to perform the steps of:

receiving a digital value;

determining a bit value for a selected bit of the digital value;

selecting a tuning range for a transconductor based on the bit value; and

tuning the transconductor within the selected range based on any remaining bits in the digital value.

18. The software of Claim 17, wherein selecting the tuning range comprises selecting a resistor from a plurality of resistors.

19. The software of Claim 17, wherein tuning the transconductor comprises:

converting the remaining bits into an analog signal; and

tuning the transconductor based on the analog signal.

20. The software of Claim 17, further operable to perform the steps of:

selecting an additional bit of the digital value; and

selecting a subrange within the range based on the value of the additional bit.

21. The software of Claim 17, wherein:  
the transconductor comprises a first transconductor  
and a second transconductor;  
selecting the tuning range comprises selecting a  
5 gain for the first transconductor and a gain range for  
the second transconductor; and  
tuning the transconductor comprises:  
producing an output current of the  
transconductor using an output current of the first  
10 transconductor and an output current of the second  
transconductor; and  
tuning a gain of the second transconductor  
within the gain range based on the remaining bits of  
the digital value.

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22. The software of Claim 17, wherein the  
transconductor is used to form a selected one of a  
filter, amplifier, mixer, integrator, or charge pump.



23. A system, comprising: ✓  
means for receiving a digital value;  
means for determining a bit value for a selected bit  
of the digital value;  
5 means for selecting a tuning range for a  
transconductor based on the bit value; and  
means for tuning the transconductor within the  
selected range based on any remaining bits in the digital  
value.